

PHYS 222

**General Physics Lecture and Laboratory II
Spring Semester**

8-10:00 MWF; T R 10-11:50

Collier Hall, Room 134

5 Sem. Hours

**Instructor: Warner K. Brown
Louis M. Collier Hall
Room 130 (First Floor)
Phone: 318.670.6409**

Office Hours: Office hours will be posted on the instructor's door.

Mission Statement

SUSLA, an institution within the Southern University system, seeks to provide a quality education for its students, while being committed to the total community. This Institution prepares students for career in technical and occupational fields; awards certificates and associate degrees; and offers courses and programs transferable to other colleges and universities. Dedicated to excellence in instructional and community service, this open enrolment institution promotes cultural diversity, provides development and continuing education, and seeks partnerships with business and industry.

Prerequisites

Math 140, Math 264 and Physics 221.

Textbook

College Physics by Sears, Zemansky, Young or College Physics by Wilson, Buffa

Required Materials

Each student must purchase the current edition of the textbook that is in the bookstore. Students are also asked to obtain some type of notebook to be used for physics notes, problems and assignments. A calculator would be most useful to you for use in problem solving. This is mandatory and will save some time and minimize mathematical errors.

GENERAL INFORMATION

Method of Instruction

1. Lecture
2. Discussion
3. Demonstration
4. Work Study
5. Conference
6. Evaluation

Methods of Evaluation

1. Quizzes
2. Examinations
3. Homework Assignments
4. Special Reports
5. Grading

Grading for this course is based upon the standard point system. During the semester, the student will have the opportunity to gain the maximum number of points through the methods of evaluation listed above. Based on the number of points, the final grade utilizes the following criteria:

90 – 100 = A

80 - 89 = B

70 - 79 = C

60 - 69 = D

59 or below = F

Also, class attendance alone will not constitute a passing grade, but may be used when assigned a specific value set up at the beginning of the course. Also, the scale might be curved down due to class performance.

Tutorial Assistance

Tutorial assistance will be available from the instructor and, if possible special students tutor. Conference hours will be available with the teacher and student tutors. These hours will be posted on the instructor's office door. If a student cannot report at the scheduled conference time, it is suggested to arrange a time that is convenient for both.

Course Description

222- General Physics (Credit, 5 hours each). (Lec., 3 Hours; Lab, 2 hours); problem-solving session (2 hours). Skills in the elementary theoretical and experimental methods of physics are developed while studying such topics as electricity, magnetism, waves and optics.

ABSENTEEISM AND TARDY POLICY

Students are expected to attend class regularly and punctually. If a student is absent for whatever reason, he/she is responsible for confirming the arrangements with his/her professor to make up work missed as soon as possible upon returning to class but no later than five (5) school days. Three (3) unexcused absences may result in a failing grade. Three (3) tardies may constitute one absence.

Classroom Behavior:

Each teacher will conduct his/her class in a fashion that will lead to student self-expression and criticism of presented facts, but moderate the class to the extent that it will be non-disturbing to its participants either in lecture or laboratory classroom. The wearing of hats inside the classroom will not be tolerated. **Electronic communication devices must be turned off in the classroom—silent mode operation is not acceptable. (If there is a medical reason for having a communication device in operational mode in the classroom, prior arrangements must be made with the instructor.)**

DISABILITY

All students with disabilities must notify the instructor for any needed assistance in compliance with the American Disability Act (ADA). In compliance with ADA policies, all qualified students enrolled in the course are entitled “reasonable accommodations”.

GOAL/OBJECTIVES

The course content is designed:

1. To satisfy the requirements for the Associate of Applied Science in Electronics Technology.
2. To satisfy the requirements for programs in Pre-Engineering.
3. To provide a science course for all university students to satisfy science electives.

SUSLA Student Learning Outcomes

(SLO 1) Writing and oral communications:

Students will be able to communicate effectively in verbal and written language, use a variety of information resources and supporting technologies to differentiate content from style of presentation, and to suite content and style to the purpose of communication.

(SLO 2) Scientific and quantitative reasoning:

Students will be able to locate, identify, collect, organize, analyze, and interpret data and use mathematics and the scientific method of inquire to make decisions where appropriate.

(SLO 3) Critical analysis and reasoning:

Students will be able to arrive at reasoned and supportable conclusions using sound research techniques, including inference, analysis, and interpretation.

(SLO 4) Technological competency:

Students will be able to use computer technology and appropriate software applications to produce documentation, quantitative data presentations, and functional graphical presentations appropriate to various academic and professional settings.

(SLO 5) Information literacy:

Students will be able to identify, locate, and effectively use information from various print and electronic sources.

(SLO 6) Leadership and Deployment (Department)

Units of Study

Chapter 10

1. Gases
2. The Perfect Gas Law
3. The Atmosphere
4. Buoyance
5. Pumps
6. Bernoulli Effects

Chapter 11

1. Temperature and Heat
2. The Difference Between Temperature and Heat
3. Measuring Temperature and Heat
4. Specific Heat

Chapter 12

1. Heat Transfer and Change of Phase
2. Heat Transfer
3. Change of Phase
4. Boiling and Freezing

Chapter 13

1. Thermodynamics, Heat Engine, and Heat Pumps
2. Thermodynamics
3. The First Law of Thermodynamics
4. Heat Engines
5. Thermal Efficiency
6. The Second Law of Thermodynamics
7. Heat Pumps
8. The Third Law of Thermodynamics
9. Entropy

Chapter 14

1. Vibrations and Waves
2. Vibrations
3. Waves
4. Energy and Intensity
5. Interference
6. Standing Waves
7. Resonance

Chapter 15

1. Sound and Music
2. The Nature of Sound
3. Speed of Sound
4. Reflection of Sound
5. Refraction of Sound
6. Resonance
7. The Doppler Effect

Chapter 16

1. Electrostatic
2. Coulomb's Law
3. Electrostatic Charging
4. Electric Charging
5. Electric Field
6. Electric Potential

Chapter 17

1. Electric Current
2. Batteries
3. Electrical Resistance
4. Ohm's Law
5. Electric Power
6. Electric Circuits

Chapter 18

1. Magnets and Magnetic Field
2. Electromagnetism
3. Magnetic Materials
4. Electromagnet
5. Motors
6. Galvanometer

Chapter 19

1. Lenz's Law
2. Generators
3. Transformers
4. Electric Power
5. Electromagnetic Waves

Course Objectives:

Upon completion of this course the student will be able to:

1. Calculate problems using the gas law, buoyancy, Bernoulli's and temperature equations. (SLO 2,3)
2. Calculate physical problems in the areas of Heat, Thermodynamics, and Waves, by understanding the principles and equations. (SLO 2,3)
3. Identify and interpret the components and design of basic types of electronic circuits. (SLO 1,2)
4. Calculate problems in the areas of optics using the principles and equations. (SLO 2,3)
5. Construct and write-up experiments on physical concepts in laboratory. (SLO 1,2,3)

Student Learning Outcomes

At the conclusion of this course, students will be able to:

1. Describe the characteristics of heat and thermodynamics.
2. Calculate scientific problems in heat and thermodynamics using formulas and constants.
3. Define direct and alternating current.
4. List and define types of electronic circuits.
5. Identify the properties of waves.
6. List the concepts of basic optics.
7. Calculate scientific problems in optics using formulas and constants.
8. Define various physical quantities in optics and waves.